Cast-like calcification in vena cava superior in a young hemodialyzed female with lupus nephritis

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Article type: Clinical image

Received: May 24, 2019.

Accepted: July 10, 2019.

Published online: July 16, 2019.

ISSN: 1897-9483

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Cast-like calcification in vena cava superior in a young hemodialyzed female with lupus nephritis

Cast-like vascular calcification in female on hemodialysis

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Conflict of Interests:

The authors declare that there is no conflict of interest regarding the publication of this paper.
Infectious complications belong to the main causes of medical consultations and hospital admissions[1] and are the second most frequent cause of mortality (preceded only by cardiovascular events) in chronic kidney disease[2]. Endocarditis is one of such infectious complications, with significantly increased prevalence and poor prognosis in patients on hemodialysis, as compared to general population[3].

A 34-year-old female with systemic lupus erythematosus which led to chronic kidney disease stage 5 on chronic hemodialysis therapy with a 2 year old tunneled catheter inserted into the right jugular vein, was admitted to the Nephrology Department of the University Hospital due to recurrent fever persisting for one week earlier. The patient had recently been hospitalized (prior 2 months) due to catheter-related infection confirmed by catheter tip cultures (Pseudomonas aeruginosa, Serratia marcescens). Transthoracic echocardiogram did not reveal any significant pathologies. After pharmacological treatment and explantation of the infected catheter the patient recovered.

On admission the patient was stable, with no fever, complaining of weakness and fatigue. Laboratory tests revealed moderate anemia, mild thrombocytopenia and moderately elevated C-reactive protein level.

Taking into consideration recent fever episodes and patient’s recovery from catheter-related infection, as well as increased inflammatory markers -blood cultures were obtained and antibiotic treatment was administered according to the last antimicrobial resistance test results.

During transthoracic echocardiography suspicion of vegetation attached to the catheter was proposed. Transesophageal echocardiogram confirmed a balloting, friable mass attached to the right atrium and catheter. A second such mass was found at the tip of the catheter (Figures A, B, C).
The diagnosis of infective endocarditis was established and the infected catheter was urgently removed. Antibiotic therapy was intensified, as well as increasing the dose of low molecular weight heparin. Hemodialysis therapy was continued using a temporary catheter inserted into the right femoral vein. Blood and catheter-tip cultures were negative – probably due to antibiotic treatment used prior to patient’s admission; however C-reactive protein levels remained increased. The therapy was complicated by development of severe thrombocytopenia (probably induced by rifampicin administration), requiring several platelet transfusions and steroid pulses. The patient’s case was consulted twice during case conferences with cardiologists and cardiac surgeons. Due to a high risk of intraoperative death, conservative management was recommended. Subsequently, magnetic resonance imaging was conducted which revealed an irregular structure with a lipomatous compound in the right atrium, measuring 26x17x18mm, tightly attached to its inferior wall. A tubular structure in the superior vena cava, 8 mm in diameter, resembling a fragment of the catheter, was also described. This finding was confirmed with computed tomography angiography. Afterwards the patient was consulted by a vascular surgeon – conclusion stated that the tubular structure was suggestive of a calcification within a thrombus and not of a broken part of the catheter (Figures D,E,F). Surgery was not indicated and therefore conservative treatment was implemented resulting in normalization of inflammatory parameters.

Echocardiogram images were stationary.

In the reported case, an intravenous catheter was the cause of recurrent infections which led to the severe complication of infective endocarditis. As calcifications affecting veins are extremely rare, the described finding of a catheter-resembling one is very uncommon. Awareness of such pathologies may help to avoid misidentification of calcifications as such was in this case where it was taken for a retained fragment of a catheter. Similar misidentifications may have significant clinical implications[4].
References:


Legend of figures:

A. Transesophageal echocardiogram – a vegetation attached to the wall of the right atrium; the tip of the hemodialysis catheter; atrial systole
B. Transesophageal echocardiogram – a vegetation attached to the wall of the right atrium; tip of the hemodialysis catheter; atrial diastole
C. Transthoracic follow-up echocardiogram 1 month later – a vegetation attached to the wall of the right atrium.
D. Computed tomography angiography, axial plane, cast-like calcification in the superior vena cava
E. Computed tomography angiography, coronal plane, cast-like calcification in the superior vena cava
F. Computed tomography angiography with 3D reconstruction, cast-like calcification in the superior vena cava